

Remarks

Claims 1-37 are pending. Applicants assert that all claims are in condition for allowance as set forth more fully below.

Objections to the Specification

The specification has been objected to for failing to provide the serial number of the related cases. The specification has been amended to provide those serial numbers and the objection may be withdrawn.

112 Rejections

Claim 9 has been rejected as being indefinite. Claim 9 has been amended to change its dependency to claim 8 such that the rejection may now be withdrawn.

Claim 9

No rejection of claim 9 under section 102 or 103 has been found. However, there has been no indication that claim 9 has allowable subject matter, and Applicants assume that the lack of a 102 or 103 rejection is an oversight. Therefore, Applicants request clarification as to the rejection of claim 9.

102 Rejections

Claims 1-6, 8, 11, and 13 stand rejected as being anticipated by Hed. In relation to the currently pending claims, Applicants respectfully traverse these rejections.

Amended claim 1 now includes the recitations similar to those of previously pending claim 3. These recitations include an interconnect circuit layer to provide electrical connection to the plurality of solid state radiation sources, a heat exchange unit, and a thermally conductive material to thermally couple the interconnect circuit layer to the heat exchange unit. In rejecting claim 3, the Office Action states that Hed discloses a heat exchanger. However, Hed fails to disclose the components in the relationship as claimed, namely a circuit layer connected to radiation sources and thermally coupled to a heat exchange unit via a thermally conductive material. To the contrary, Hed discloses a cooling bar utilizing cooling fluid where the light sources are in thermal contact with a

tubular structure within the cooling bar. There is no disclosure of Hed that a circuit layer connected to the radiation sources is thermally coupled to a heat sink, and that furthermore, the thermal coupling is provided by a thermally conductive material. Accordingly, claim 1 is allowable over Hed for at least these reasons.

Dependent claims 2-18 depend from an allowable claim 1 and are also allowable for at least the same reasons. Furthermore, one or more of these claims are also allowable for additional reasons. For example, claim 3 specifies that the thermally conductive material is a thermally conductive adhesive and Hed fails to disclose such. As another example, claim 11 recites that an optical element distributes radiation from the optical waveguide in a distribution pattern and Hed does not disclose an optical element that receives radiation from a waveguide to the distribute it in a pattern but simply provides a coupling from one set of fibers to another set.

103 Rejections

Claims 7 and 14-18 stand rejected as being unpatentable over Hed. Claims 1, 10, 12, 17, 19-26, and 29-37 stand rejected as being unpatentable over Decaudin in view of Hed, and while claims 27 are rejected over Decaudin in view of Head and futher in view of Bi. Applicants respectfully traverse these rejections.

Regarding claims 7 and 14-18 being rejected solely on the basis of Hed, these claims depend from an allowable base claim and are also allowable for at least the same reasons. Furthermore, one or more of these claims are allowable over Hed for additional reasons. For example, claim 17 refers to ultraviolet radiation sources and Hed not only fails to disclose ultraviolet radiation sources but teaches away from such a modification. Hed is for the purpose of illuminating an area with visible light, and particularly combinations of red, green, and blue light. In particular, Hed chooses the light source as LEDs for the preferred embodiment on the basis of LEDs ability to most efficiently convert electricity to visible light, whereas incandescent lights are not adequately efficient, as stated at col. 8, lines 13-25. Thus, the intended purpose of Hed to illuminate an area with a combination of colored light would be defeated by the inclusion of ultraviolet radiation sources which would fail to produce any visible light. Accordingly,

there can be no motivation to include ultraviolet radiation sources in the apparatus of Hed.

Regarding claim 1 being rejected over Decaudin in view of Hed, claim 1 include recitations not disclosed by either Decaudin or Hed. As discussed above, Hed does not disclose a circuit layer connected to the radiation sources that is thermally coupled to a heat sink using a thermally conductive adhesive and Decaudin also fails to disclose these recitations such that the combination fails to disclose all of the elements. Accordingly, claim 1 is allowable over the combination, and dependent claims 2-18 are also allowable over the combination at least because they depend from an allowable base claim. Furthermore, one or more of these dependent claims are allowable over the cited combination for additional reasons, such as those reasons discussed above for claims 11 and 17.

Regarding claim 19 being rejected over Decaudin in view of Hed, claim 19 has been amended and includes recitations not disclosed by the purported combination of Decaudin or Hed. Namely, claim 19 now recites that the radiation sources are ultraviolet. There can be no motivation to modify Decaudin based on the disclosure of Hed for two separate reasons. First, Decaudin is in the dental curing arts while Hed is in the visible lighting arts, which is non-analogous to the curing arts. One of skill in the art would not look to art for visible lighting of the environment when seeking to learn modifications relevant to a dental curing reference. Second, the claim recites that the light is ultraviolet, and Hed becomes ineligible for consideration to modify Decaudin where such a combination requires the use of ultraviolet radiation because Hed contemplates only visible light for its intended purpose. Accordingly, claim 19 is allowable over the purported combination for at least these reasons.

Claims 20-30 depend from an allowable base claim and are also allowable for at least the same reasons. Furthermore, one or more of these claims are allowable over the cited combination for additional reasons. For example, claim 30 recites that the second ends of the fibers are patterned to uniformly irradiate the radiation-curable chemical formulation. Neither Decaudin nor Hed discloses that the fibers are patterned in order to uniformly irradiation the formulation on the non-uniform structure and it would not be obvious to otherwise modify Decaudin based solely on the disclosure of Decaudin and

Hed because to do so would require Decaudin to have a separate pattern for every tooth being treated since every tooth would have a different non-uniformity requiring a different pattern of the fibers in order to uniformly irradiate. Decaudin does not even disclose how to uniformly irradiate a single non-uniform structure/tooth but appears to presume that the radiation is adequate without necessarily uniformly irradiating the tooth.

Regarding claim 31 being rejected over Decaudin in view of Hed, as stated above, there can be no motivation to modify Decaudin based on the disclose of Hed. Hed is in a nonanalogous art relative to Decaudin, environmental lighting versus dental curing. Accordingly, the rejection of claim 31 based on Decaudin in view of Hed is improper and should be withdrawn.

Conclusion

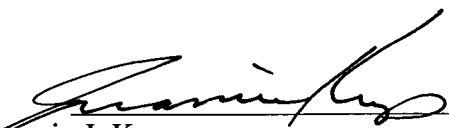
Applicants assert that the application including all claims 1-37 is now in condition for allowance. Applicants request reconsideration in view of the amendments and remarks above and further request that a Notice of Allowability be provided. Should the Examiner have any questions, please contact the undersigned.

No fees are believed due except an extension fee for two months. The fee is attached.

Respectfully submitted,

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